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Lawrence Livermore National Laboratory

Information and References for Hospital Emergency Response Planners



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There may be significant health care worker absenteeism for radiological events

Commitment to help staff non-hospital, field medical facilities by incident and Type of Practice		
	Physician (559)	Nurse (2775)
Natural Disaster	83%	90%
Explosion Incident	67%	70%
Chemical Incident	59%	59%
Biological Incident	56%	53%
Contagious Epidemic	56%	49%
Radiological Incident	52%	45%

Lanzilotte, S., "Hawaii Medical Professionals Assessment", Hawaii Medical Journal, Vo1 61. August 2002



There may be significant health care worker absenteeism for radiological events

Health Care Workers' Ability and Willingness to Report to Duty During Catastrophic Disasters (n=6,428, 47 facilities)

	Willing	Able
Snow Storm	80%	49%
Bioterrorism (smallpox)	61%	69%
Chemical Terrorism	68%	71%
Explosion Incident (MCI)	86%	83%
Environmental Disaster	84%	81%
Radiological Terrorism	57%	64%
SARs outbreak	48%	64%

Able

Transportation,
& dependant
care

Willing

Fear and
concern for
family and self

Qureshi, K, Gershon,R., Gebbie, E., Straub, T, and Morse, S. (2005). Healthcare workers ability and willingness to report to duty during a catastrophic disaster. *Journal of Urban Health*. 82(3):378-88.



Risk Perception is NOT Reality

League of Women Voters	Activity or Technology	Experts
1	Nuclear power	20
2	Motor vehicles	1
3	Handguns	4
4	Smoking	2
5	Motorcycles	6
6	Alcoholic beverages	3
7	General (private) aviation	12
8	Police work	17
9	Pesticides	8
10	Surgery	5

Source: Science (Paul Slovic/Decision Research), as presented in NY Times, 1 February 1994.



We Can Fix This

- Get the facts
- Have a radiological emergency response plan
- Inform, train, exercise staff



Three Myths That Can Paralyze Medical Response



Myth 1

Radioactive Contamination is Highly Dangerous and Requires Extraordinary Protective Measures



Fact 1

“Skin or wound contamination is never immediately life threatening to affected people or medical personnel”

~ International Commission on Radiological Protection, report # 96

- Radioactive contamination:
 - Is NOT immediately dangerous to life and health
 - Is *easily* managed and contained using basic antiseptic practices (good hygiene, proper attire, proper gloving practices, etc.)
- Radioactive contamination (unlike biological or chemical agents) presents *little* hazard to the medical staff



Myth 2

Decontamination of the Patient is the Highest Medical Priority



Fact 2

“rescue and medical emergencies take precedence over radiological concerns”

“..radioactive material contamination rarely represents an immediate danger to the health of the victim or the responder. This reduces the immediacy of the need for decontamination and allows the emergency response community greater flexibility in selecting decontamination options”

~ National Council on Radiation Protection and Measurements, Commentary # 19

- Critical care takes precedence over monitoring or decontamination
- Simple decontamination; outer clothing removal and wiping exposed skin can often be sufficient



Myth 3

You need “special skills” to handle radioactive patients



Fact 3

“Universal precautions (i.e., standard hospital personal protection procedures) in the emergency room are generally sufficient for treatment of victims of nuclear and radiological incidents”

~ National Council on Radiation Protection and Measurements, Commentary # 19



- Radioactivity can be easily and immediately measured with radiation meters (e.g., Geiger counters) are needed.
 - They are easy to use
 - Many hospitals already have them
 - Most fire departments now have meters
- Contamination surveys are easily taught and easily performed



Radiation Event Medical Management, U.S. Dept. of Health and Human Services - REMM - Windows Internet Explorer

http://www.remm.nlm.gov/

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

REMM
Radiation Event Medical Management
Guidance on Diagnosis & Treatment for Health Care Providers

REMM HOME | CONTACT US | SITE MAP | ABOUT REMM

SEARCH

WHAT KIND OF EMERGENCY? | INITIAL EVENT ACTIVITIES | PATIENT MANAGEMENT | MANAGEMENT MODIFIERS | TOOLS & GUIDELINES

WHAT KIND OF EMERGENCY?

- Radiological Dispersal Devices: Dirty Bomb, Other Dispersal Methods
- Radiological Exposure Devices: Hidden Sealed Source
- Nuclear Explosions: Weapons, Improvised Nuclear Devices
- Nuclear Reactor Accidents
- Transportation Accidents
- Discovering an Event

INITIAL EVENT ACTIVITIES

- Onsite Activities
- Triage Guidelines
- Hospital Activities

OTHER AUDIENCES

- First Responders in the Field
- Mental Health Professionals
- Hospitals
- Public Information Officers
- Radiation Safety and Protection
- Preplanning
- Practices and Drills

ABOUT THIS SITE

- What Are the Goals of This Site?
- Who Produced This Site?
- Disclaimers
- List of Consultants
- Join the REMM ListServ
- Contact us: Provide Site Feedback
- Download REMM to Your Computer
- System Requirements (e.g., Allow Pop-ups)

PATIENT MANAGEMENT

- Choose Appropriate Algorithm: Evaluate for Contamination/Exposure
- Contamination
- Exposure (Acute Radiation Syndrome)
- Exposure + Contamination

MANAGEMENT MODIFIERS

- Radiation + Trauma
- Burn Triage and Treatment
- Mass Casualty
- Psychological Issues
- Specific Populations

TOOLS & GUIDELINES

- Dose Estimator for Exposure
- Template for Hospital Orders
- Use of Blood Products
- Follow-up Instructions
- Population Monitoring
- Management of the Deceased
- Develop a Hospital Medical Response Team
- Develop a State Response Plan
- Equip an Emergency Department for Decontamination

REFERENCE/DATA CENTER

- Training and Education
- Dictionary
- Animations, Illustrations, Photos
- Emergency Contacts
- Abbreviations
- Understanding Radiation
- Sources of Radiological/Nuclear Information

FEATURES

- Population Monitoring in Radiation Emergencies: A Guide for State and Local Public Health Planners, 8/2007 (HHS/CDC)
- HHS Public Health Emergency Medical Countermeasures Plan for Chemical, Biological, Radiological and Nuclear (CBRN) Threats, 4/2007 (HHS)
- Medical Countermeasures Against Radiological and Nuclear Threats (NIH/NIAD)

QUICK LINKS

- **New Users: Where Do I Start?**
- Use REMM: Earn CME
- Patient Management Algorithms
- Print Algorithms & Tables
- Isotopes of Interest
- Countermeasures
- Decontamination Procedures
- Dose Estimator for Exposure
- Manage ARS Subsyndromes
- Hematopoietic Subsyndrome
- Time/Dose Effects in ARS
- Strategic National Stockpile
- Animations, Illustrations, Photos
- Dictionary
- Emergency Contacts
- **Download This Site (10/2007)**

OTHER WEB RESOURCES

▪ AFRR	▪ HHS
▪ AHRQ	▪ IAEA
▪ CDC	▪ ICRP
▪ CRCPD	▪ NCRP
▪ DHS	▪ NRC
▪ DOE	▪ OSHA
▪ EPA	▪ REAC/TS
▪ FDA	▪ WHO

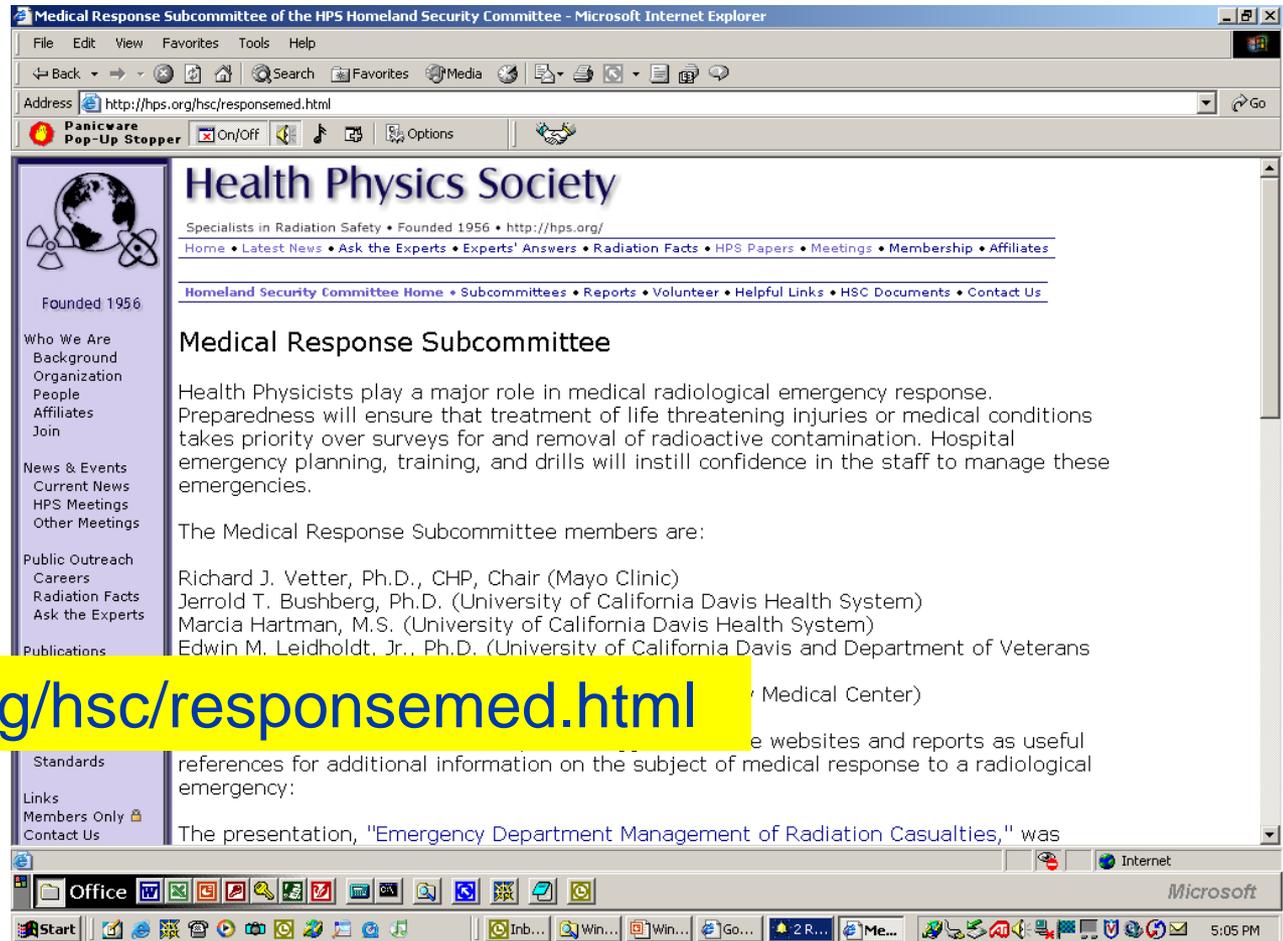
<http://www.remm.nlm.gov/>



Planning; Help is Out There

Use the Homeland Security Committee's Medical Response Website for Information

Visit <http://hps.org/hsc/responsemed.html>



Questions



The 800 Pound Gorilla of Radiological Response



How do you triage the merely distressed from the truly exposed?

Self-Referral by the Worried Well

In Goiania, Brazil, a large teletherapy source was opened by scavengers and the radioactive material circulated through a neighborhood. 249 people were contaminated by the material; four died.

However, **120,000** townspeople went to a soccer stadium to get checked for contamination (12% of the population)

In this group, a number of people presented symptoms (nausea, vomiting, etc.) which are features of radiation sickness. Of these,

NONE were contaminated.



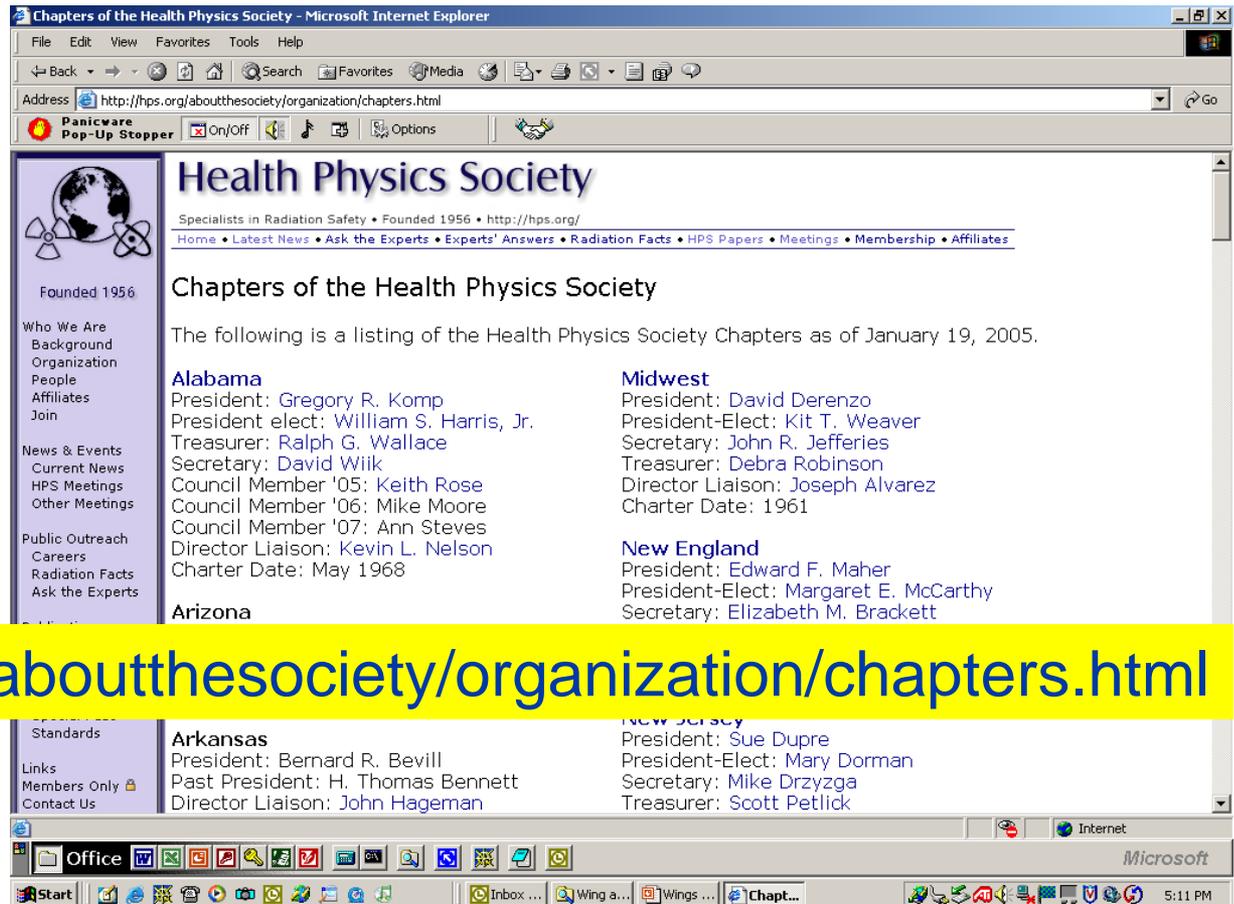
The Profession of Health Physics

- Health Physicists have been working EXCLUSIVELY with issues in radiation and radioactivity for over 60 years.
- They have a professional society, the Health Physics Society (founded 1956)
- The Society is sub-specialized into Sections, including Decommissioning, Medical, and Homeland Security.
- They have a local presence (42 local Chapters across the United States)
- They VOLUNTEER to assist other organizations with radiation safety matters



How Local Health Physicists Can Help

Work with
Volunteers from
Nearby Society
Chapters



The screenshot shows a Microsoft Internet Explorer browser window displaying the website for the Health Physics Society. The address bar shows the URL: <http://hps.org/aboutthesociety/organization/chapters.html>. The page title is "Chapters of the Health Physics Society". The main content area lists the following chapters and their officers as of January 19, 2005:

- Alabama**
President: Gregory R. Komp
President elect: William S. Harris, Jr.
Treasurer: Ralph G. Wallace
Secretary: David Wiik
Council Member '05: Keith Rose
Council Member '06: Mike Moore
Council Member '07: Ann Steves
Director Liaison: Kevin L. Nelson
Charter Date: May 1968
- Arizona**
- Midwest**
President: David Derenzo
President-Elect: Kit T. Weaver
Secretary: John R. Jefferies
Treasurer: Debra Robinson
Director Liaison: Joseph Alvarez
Charter Date: 1961
- New England**
President: Edward F. Maher
President-Elect: Margaret E. McCarthy
Secretary: Elizabeth M. Brackett
- New Jersey**
President: Sue Dupre
President-Elect: Mary Dorman
Secretary: Mike Drzyzga
Treasurer: Scott Petlick
- Arkansas**
President: Bernard R. Bevill
Past President: H. Thomas Bennett
Director Liaison: John Hageman

The website also features a sidebar with navigation links such as "Who We Are", "News & Events", "Public Outreach", and "Standards".

Visit <http://hps.org/aboutthesociety/organization/chapters.html>



Additional References

- Dainiak N et al. [Development of a statewide hospital plan for radiologic emergencies](#). Int J Radiat Oncol Biol Phys. 2006 May 1;65(1):16-24. [PubMed Citation]
- [Managing Radiation Emergencies: Hospital Emergency Care](#) (REAC/TS)
- [Training of Hospital Staff to Respond to a Mass Casualty Incident](#) (PDF - 511 KB) (Evidence Report/Technical Assessment Number 95, AHRQ Publication No. 04-E015-2, July 2004)
- [Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism](#) (NCRP Commentary No. 19, December 2005, purchase required; see [Free Overview](#) (PDF - 219 KB))
- Becker, S.M. [Emergency Communication and Information Issues in Terrorism Events Involving Radioactive Materials](#) (PDF - 89 KB). Biosecurity and Bioterrorism. 2004;2(3): 195-207.[PubMed Citation]
- [Patient Decontamination: Recommendations for Hospitals](#) (PDF - 124 K) (The Hospital and Healthcare System Disaster Interest Group and the California Emergency Medical Services Authority, July 2005, EMSA #233, Radiological Contamination, pages 11-16)
- Bushberg JT, Miller KL. [Hospital Responses to Radiation Casualties](#) (PDF - 141 KB) (Health Physics Society, 2004)
- Bushberg JT, Kroger LA, Hartman MB, Leidholdt EM Jr, Miller KL, Derlet R, Wraa C. [Nuclear/radiological terrorism: Emergency department management of radiation casualties](#). J Emerg Med. 2007 Jan;32(1):71-85. [PubMed Citation]
- [Interim Guidelines for Hospital Response to Mass Casualties from a Radiological Incident](#) (PDF - 527 KB) (HHS/CDC, December 2003)

